

# Urban Development Detection Near A Military Installation

## INTRODUCTION

The population and land development in and around many U.S. cities have grown significantly in the past twenty years. The urbanization and sprawl outside military installations have influenced the military community's ability to maintain their mission focus. Some military installations inadvertently affect the local community by excessive noise, dust and competition of resources. This study uses satellite remote sensing data to identify the influence of surrounding community growth on a selected military installation, the Fort Benning training base. The installation is located in the lower Piedmont Region in Western Central Georgia. Its immediate neighbors include Columbus, Georgia and Phoenix City, Alabama. The city of Atlanta is about 200 miles north.

## DATA AND METHOD

Landsat 5 TM and Landsat 7 ETM+ images acquired on March 9, 1993 and March 7, 2001 were the primary data source used for this study. Changes in urban areas and installation were identified through quantifying impervious surface as an indicator of urban sprawl (Fig. 1). A regression tree method was used to model imperviousness percentage for two dates at a 30 meter spatial resolution.

## RESULTS

Figure 2a illustrates the percent imperviousness in and around Columbus and the Fort Benning in 1993 and 2001. The changes between these two dates are shown in Figure 2b. Changes in greenness is also mapped (Fig. 3). Additionally, the impervious surface variation around the Northern Atlanta is displayed (Fig. 4).

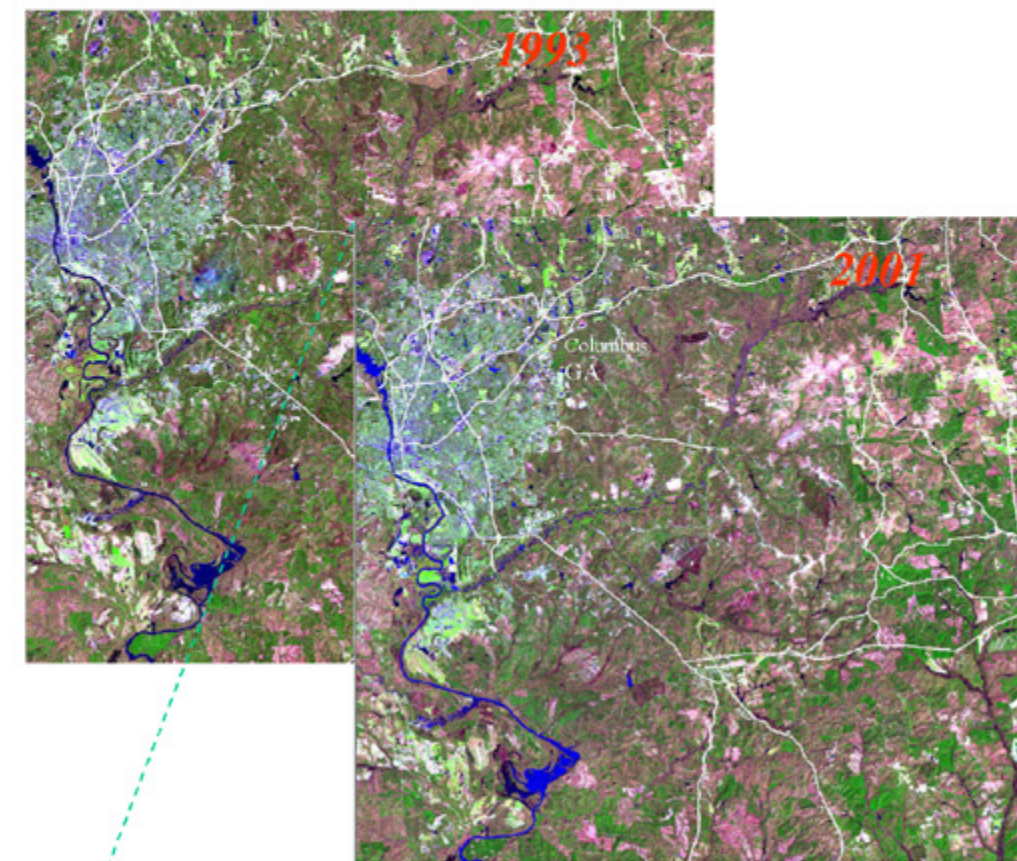


Fig. 1. Landsat 5 TM, 03/09/93 (upper) and Landsat 7 ETM+, 03/07/01 (low).

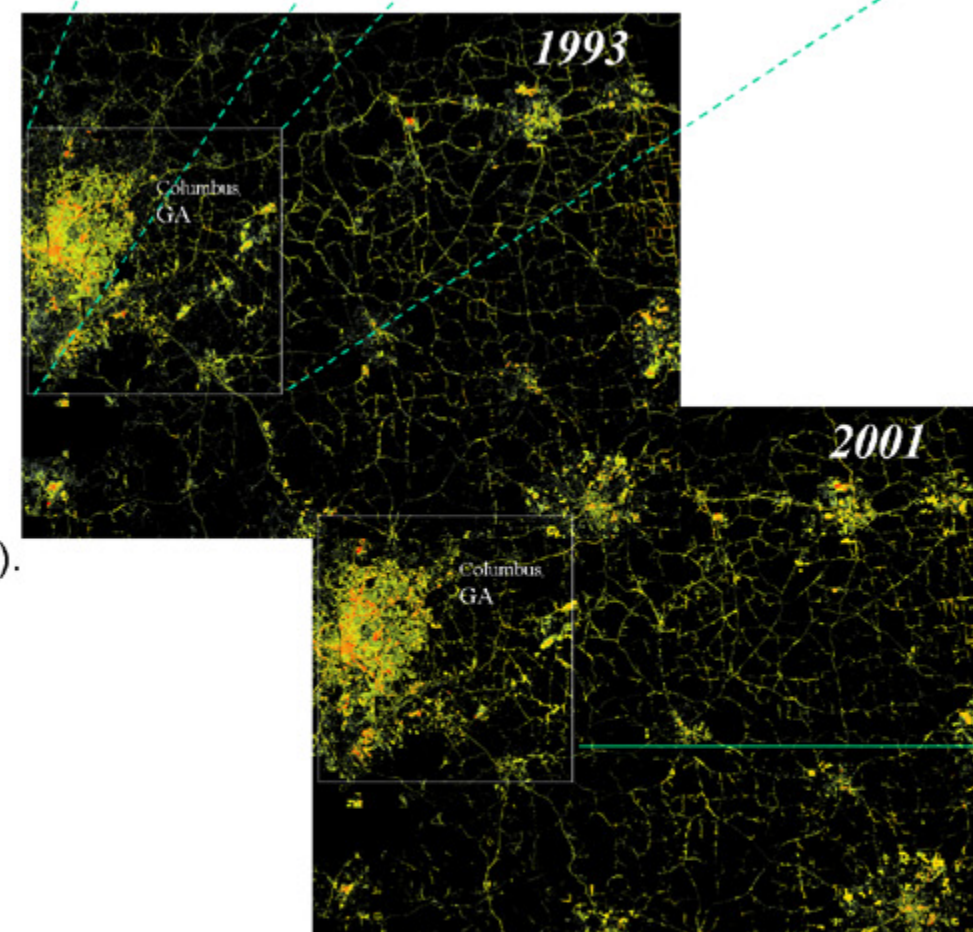


Fig. 2a. Impervious surface of Fort Benning and Columbus, 1993 (upper) and 2001 (low)

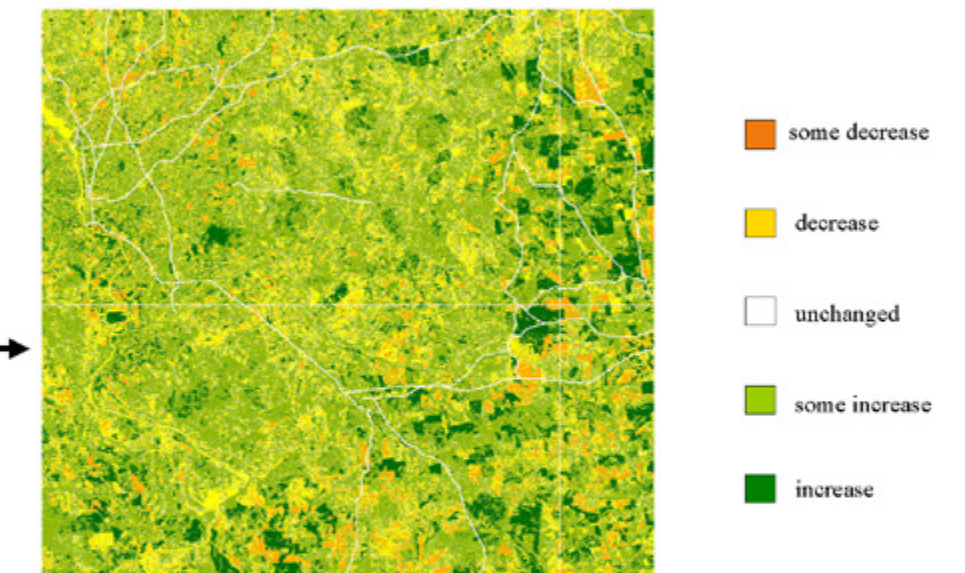


Fig. 3. Change of greenness, Fort Benning and Columbus, GA (2001-1993)

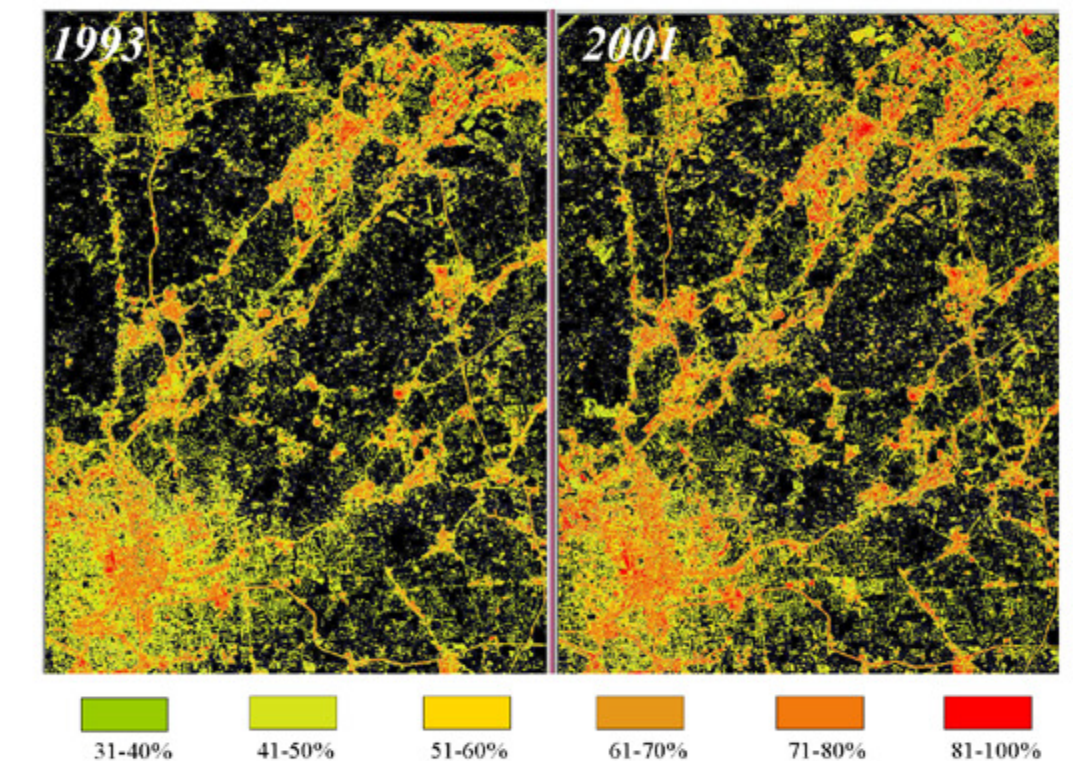


Fig. 4. Impervious surface of Northern Atlanta, GA, 1993 (left) and 2001 (right)

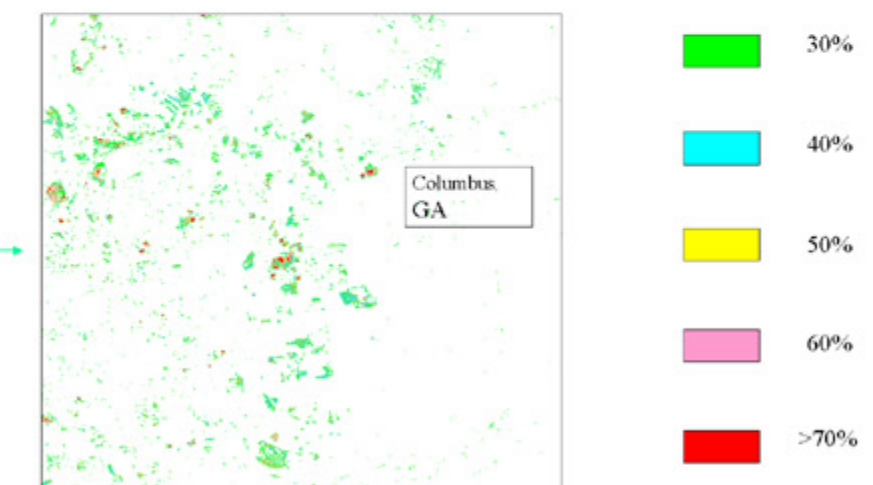


Fig. 2b. Change in impervious surface, Columbus (2001-1993)